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EXAMINER

BENGZON, GREG C

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/713,237	Applicant(s) KHOSRAVI ET AL.	
	Examiner GREG BENZON	Art Unit 2444	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-15 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-15, 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This application has been examined. Claims 7-15,19-24 are pending. Claims 1-6, 16-18 are cancelled.

Making Final

Applicant's arguments filed 08/01/2008 have been fully considered but they are not persuasive.

The Examiner is maintaining the rejection(s) using the same grounds for rejection and thus making this action FINAL.

Priority

The effective date of the claims described in this application is November 13, 2003.

Specification

Claims 22-24 are objected to because of the following informalities:

Claims 22-24 recite *an article of computer-readable media*.

While the inventor may define specific terms used to describe invention, the inventor must do so “with reasonable clarity, deliberateness, and precision” and, if done, must “set out the inventor's uncommon definition in some manner within the patent disclosure' so as to give one of ordinary skill in the art notice of the change” in meaning. Any special meaning assigned to a term “must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention.

The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites '*an application programming interface in accordance with a standard defined by the Network Processing Forum.*'

Claim 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2444

Claims 7-15,19-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15,19, and 22 recites '*a control portion of the control plane protocol module that is separate and distinct from the core functionality [of the control plane].*'

Claims 15,19,22 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language.

Applicant Specifications Page 3 Lines 10-20 describe control plane functions and forwarding planes and their respective functions. However in the claim language there is no description of what portion [of functionality] the worker plane module is implementing. The Examiner notes that a person of ordinary skill in the art would not be able to ascertain what is the *separate and distinct [functionality] from the core functionality of the control plane.*

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7-15 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 7-15 are directed towards a system comprising of a control plane, a forwarding plane, and modules. Upon inspection of the Applicant Specifications Page 10-11 the Examiner concludes said control plane, forwarding plane, and modules are nothing more than software components.

Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-15,19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Everdell (US Publication 2002/0165961) further in view of Crump (US Patent 6999454).

Everdell-Crump disclosed (re. Claim 15) a system, comprising: a control plane having a controller control plane protocol module (Everdell-Paragraph 166, 'master control driver MCD', Paragraph 577, 'Master SRM') to implement a core functionality of a control plane protocol module (Everdell-Paragraph 8, 'each distributed processor within the network device', Paragraph 10, Paragraph 145')

at least one forwarding plane (Everdell-Paragraph 153) having a worker control plane protocol module (Everdell-Paragraph 577, 'local resiliency managers LRM')

a backplane to provide connectivity between the control plane and the forwarding plane; (Everdell-Paragraph 146, 'client out-of-band management channel ') and

an infrastructure module resident on the control plane and the forwarding plane constructed and arranged to manage the connectivity between the control plane and the forwarding plane. (Everdell-Paragraph 10, Paragraph 145)

Everdell-Crump disclosed (re. Claim 15) the system further comprising a communication library resident on the control plane and the forwarding plane (Everdell-Paragraph 109, Paragraph 125, 'API', Paragraph 470, 'library of compiled code') to

Art Unit: 2444

communicate with the infrastructure module to obtain information about control plane protocol modules and to setup connections with the control plane protocol modules.

(Everdell-Paragraph 122)

Everdell-Crump disclosed (re. Claim 15) the control plane further comprising a controller control plane protocol module. (Everdell-Paragraph 166, '*master control driver MCD*', Paragraph 577, '*Master SRM*')

Everdell disclosed a network device having a distributed architecture may include an internal out-of-band control plane. Each of the distributed processors is connected to the out-of-band control plane, and the processors use the out-of-band control plane to transmit control information.

However Everdell did not disclose (re. Claim 15) implementing a portion of the control plane protocol module that is separated from the core functionality.

Crump disclosed (re. Claim 15) implementing a portion of the control plane protocol module that is separated from the core functionality. (Crump-Figure 8, Column 4 Lines 55-65, ' *The control plane is split into box management control functions and routing control functions.*', Column 6 Lines 55-65)

Art Unit: 2444

Everdell and Crump are analogous art because they present concepts and practices regarding the separation of network management control functions. At the time of the invention it would have been obvious to a person of ordinary skill in the networking art to combine Crump into Everdell. The motivation for said combination would have been to improve router scalability with respect to the control plane. (Crump-Column 6 Lines 35-40)

Everdell-Crump disclosed (re. Claim 15) the forwarding plane further comprises a worker control plane protocol module. (Everdell-Paragraph 577, '*local resiliency managers LRM*'))

Everdell-Crump disclosed (re. Claim 7) the infrastructure further comprising at least one standardized application programming interface. (Everdell-Paragraph 109)

Everdell-Crump disclosed (re. Claim 8) the application programming interface further comprising an application programming interface in accordance with the Network Processing Forum. (Everdell-Paragraph 109, Paragraph 125, 'API')

Everdell-Crump disclosed (re. Claim 9) the infrastructure module further comprising a namespace to allow registration of components of the infrastructure

Art Unit: 2444

module. (Everdell-Paragraph 110,Paragraph 146)

Everdell-Crump disclosed (re. Claim 10) the infrastructure module further comprising a control plane protocol module registration module and a packet redirection module. (Everdell-Paragraph 110,Paragraph 112,Paragraph 146)

Everdell-Crump disclosed (re. Claim 11) the infrastructure module further comprising a binding and discovery module (Everdell-Paragraph 483) and a transport module to allow the infrastructure module to communicate with other infrastructure modules on other network devices. (Everdell-Paragraph 10,Paragraph 145)

Everdell-Crump disclosed (re. Claim 12) the communication library further comprising a peer control plane protocol module application programming interface. (Everdell-Paragraph 557, '*separation of the data plane (device drivers) and control plane applications) results in the device drivers being peers of the applications.*'))

Everdell-Crump disclosed (re. Claim 13) the communication library further

Art Unit: 2444

comprises a messaging layer. (Everdell-Paragraph 109)

Everdell-Crump disclosed (re. Claim 14) the communication library further comprising a transport abstraction layer to handle interconnection and transport protocols. (Everdell-Paragraph 161)

Everdell-Crump disclosed (re. Claim 19) a method of distributing processing in a network device, comprising: defining controller and worker control plane protocol modules (Everdell-Paragraph 8, 'each distributed processor within the network device') wherein the controller control plane protocol module implements a core functionality of a control plane protocol module on a control plane, and wherein the worker control plane protocol module implements a portion of the control plane protocol module that is separated from the core functionality on at least one forwarding plane; (Crump-Figure 8, Column 4 Lines 55-65, 'The control plane is split into box management control functions and routing control functions.', Column 6 Lines 55-65)

developing corresponding entries in a communications library; (Everdell-Paragraph 109, Paragraph 125, 'API', Paragraph 470, 'library of compiled code') implementing an infrastructure module, the communication library and the controller module on a control plane; (Everdell-Paragraph 6) and implementing the infrastructure

Art Unit: 2444

module, the communication library and the worker modules on a forwarding plane.

(Everdell-Paragraph 153)

Everdell-Crump disclosed (re. Claim 20) defining a controller and worker control plane protocol modules further comprising providing interfaces between the controller and worker modules. (Everdell-Paragraph 109, Paragraph 125, 'API')

Everdell-Crump disclosed (re. Claim 21) developing corresponding entries in a communications library further comprising developing instructions that, when executed, cause the controller and worker control plane protocol modules to communicate. (Everdell-Paragraph 146, 'client out-of-band management channel')

Claims 22-24 (article of computer readable media) are rejected on the same basis as Claims 7-15, 19-21.

Response to Arguments

Applicant's arguments filed 02/08/2008 have been fully considered but they are not persuasive.

The Examiner maintains the objection to the Specifications with respect to Claims 22-24. The Applicant equates an article of computer-readable media to a machine readable code and provides support in Applicant Specifications Page 10. The Examiner maintains that a person of ordinary skill in the networking art would interpret an *article* as a product of manufacture, said product being described in a manner to fit the classification of statutory subject matter. Since machine-readable code in itself is non-statutory subject matter, the Examiner maintains that said machine-readable code cannot properly construed as a product of manufacture.

The Examiner maintains the USC 112 rejection regarding Claim 8 as the claim amendments do not overcome the shortcomings cited in the rejection.

The Examiner notes that said Network Processing Forum is ill-defined as written in both the claim language and in the Applicant Specifications. The Network Processing Forum and its standards is a dynamic entity subject to future modifications. Thus the claims are intending to cover all future standards and modifications by said entity.

The Examiner maintains the USC 112 rejection regarding Claims 15,19,22. The Examiner believes the Applicant has misinterpreted the reasoning behind the rejection. The module performing the '*portion of functionality*' is the worker plane module, as

Art Unit: 2444

stated by the Applicant. However the claims fail to distinguish what control functions are being claimed in the limitation described by the '*portion of functionality*'.

The Examiner maintains the USC 101 rejection regarding Claims 7-15.

The Applicant presents the control plane, forwarding plane and modules are being embodied in a physical network element.

It is noted that the features upon which applicant relies (i.e., *physical network element*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

There is nothing in the claim language to suggest that the control plane, forwarding plane and modules are comprised of (or a part of) a physical network element.

The Applicant presents the following argument(s) [*in italics*]:

... Everdell's master SRM and local resilient manager LRM perform the same functions but with different level of abstractions, not different functions as recited in claim 1, namely "the core functionality of the control plane protocol module and the portion of the control plane protocol module that is separated from the core functionality." With respect to Everdell's MCD, neither the relevant paragraphs cited by the Examiner nor elsewhere does Everdell mention or imply that Everdell's MCD implements "a core functionality of the control plane protocol module," while offloading

Art Unit: 2444

the portion separated from the core functionality to the slave and/or local resilient manager.

The Examiner respectfully disagrees with the Applicant. The Examiner notes that while there is a possibility of overlapping functionality between the master SRM and LRM, it would have been obvious to a person of ordinary skill in the networking art that given the management hierarchy the two entities are not performing the exactly same functions, such that the master SRM is offloading some functionality to the LRM.

However in an effort to expedite prosecution the Examiner presents prior art by Crump which presents control and forwarding planes, wherein *the control plane is split into box management control functions and routing control functions.*

The Applicant presents the following argument(s) *[in italics]*:

Crump teaches a forwarding plane implementing only the forwarding functions, and a separate control plane implementing all of the control plane functions... Crump does not teach a forwarding plan implementing a portion of the control plane functions.

The Examiner respectfully disagrees with the Applicant. Crump Figure 2 disclosed two separate and distinct portions of the control plane being implemented together (Routing and Forwarding) said portions thus regarded as core functionality of the control plane. Furthermore Crump Figures 5-6 disclosed wherein said portions are

Art Unit: 2444

now implemented separately. Thus Everdell-Crump disclosed *a forwarding plane implementing a portion of the control plane functions.*

The Applicant argument appears to be implying that the claimed invention forwarding plane is actually implementing a shared functionality. The Examiner respectfully request further clarification as this argument is contradictory to what the claim language indicates.

The Applicant presents the following argument(s) *[in italics]*:

... The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit.. The rationale provided by the OA at pages 6-12 for supporting the conclusion of obviousness for claims 7-15 and 19-24 appears most closely akin to the KSR rationale of combining prior art elements according to known methods to yield predictable results.

Everdell and Crump are analogous art because they present concepts and practices regarding the separation of network management control functions. At the time of the invention it would have been obvious to a person of ordinary skill in the networking art to combine Crump into Everdell. The motivation for said combination would have been to improve router scalability with respect to the control plane. (Crump-Column 6 Lines 35-40)

Furthermore the Examiner notes that while there is a possibility of overlapping

Art Unit: 2444

functionality between the master SRM and LRM, it would have been obvious to a person of ordinary skill in the networking art that given the management hierarchy the two entities are not performing the exactly same functions, such that the master SRM is offloading some functionality to the LRM. A person of ordinary skill in the networking art would have been motivated to implement a hierarchical control plane with distributed functionality such that the master SRM is offloading some functionality to the LRM in order to avoid bottleneck conditions at the higher control nodes.

The Applicant presents the following argument(s) *[in italics]*:

Crump may teach that the control plane is split into separate functions, but it still does not teach implementing a portion of the control plane protocol module that is separate and distinct from the core functionality on at least one forwarding plane... [Crump is] clearly implying that the router 600 does not implement anything on the forwarding plane. Crump cannot teach implementing control plane functions on the forwarding plane if the router 600 supports a distributed control plane that runs independently of the forwarding plane.

The Examiner respectfully disagrees with the Applicant. The Applicant assertion that *the router 600 does not implement anything on the forwarding plane* is incorrect.

The Examiner notes that 'independently of the forwarding plane' does not mean 'exclusive of the forwarding plane.' Crump clearly indicates that the forwarding plane is necessary in order for said distributed control plane to perform the necessary management and routing functions. Furthermore since the routing control was

Art Unit: 2444

previously considered a portion of the control plane (Crump-Column 3 Lines 30-40) but is now separated and implemented on the forwarding plane (Crump- Column 6 Lines 25-45) then Everdell-Crump disclosed *implementing a portion of the control plane protocol module that is separate and distinct from the core functionality on at least one forwarding plane.*

Conclusion

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Bengzon whose telephone number is (571) 272-3944. The examiner can normally be reached on Mon. thru Fri. 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on (571)272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2444

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. B./

Examiner, Art Unit 2444

/Paul H Kang/

Primary Examiner, Art Unit 2444